PowerPanel Operation Manual

Contents

Chapter 1. Introduction

This instruction manual for optimal PowerPanel™ operation is intended for all assigned operators, managers, and apprentices in the department for training and dialy work operations purposes. This documentation will address PowerPanel™ installation and equipment setup, initial system startup, restarting the system after power outages, lockout procedures, dsipenser maintenance, and system maintenance.

How to use this manual

This manual is only intended for the PowerPanel™ operation and should not be used to diagnose specific mechanical issues outside of PowerPanel™ operation. Please refer to the Table of Contents to navigate to the reference topic desired.

Chapter 2. Safety

Safety

This section will describe the various warning labels and their levels of importance as related to installation and startup and maintenance.

Chapter 3. Regulations and Code Requirements

Regulations and Code Requirements

Thi ssystem is 120VAC control and with the UL489 bus system, all dispenser breakers are on the same phase. The maximum potential of the panel is 120VAC. When providing any equipment that includes product dispensing controls as an integrated component, the equiment must meet the following standards of the Underwriters Laboratories (UL) Standards listed under NFPA 30A and 508A.

NEC 514.11

Fuel dispensing systems shall be provided with one or more clearly identified emergency shutoff devices or electrical disconnects. Such devices or disconnects shall be installed in approved locations but not less than 6m (20ft) or more that 30m (100ft) from the fuel dispensing devices that they serve. Emergency shutoff devices or electrical disconnects shall disconnect power to all:

- dispensing devices
- remote pumps serving the dispensing devices
- associated power, control, and signal circuits
- other electrical equipment in the hazardous (classified) locations surrounding the fuel dispensing devices

Emergency shutoff devices or electrical dsiconnects must mechanically or electrically isolate other fluid transfer systems serving the fuel dispensing area.

When more than one emergency shutoff device or electrical disconnect is provided, all devices shall be interconnected. Resetting from an emergency shutoff condition shall require manual intervention and the manner of resetting must be approved by the authority having jurisdiction.

At attended motor fuel dispensing facilities, the device(s) or disconnect(s) shall be readily accessible to the attendant and labeled with an approved sign stating “EMERGENCY FUEL SHUTOFF” or equivalent language.

At unattended motor fuel dispensing facilities, the device(s) or disconnect(s) shall be readily accessible to patrons and at least one additional device or disconnect shall be readily accessible to each group of dispensing devices on an individual island. The device(s) or disconnect(s) shall be labeled with an approved sign stating “EMERGENCY FUEL SHUTOFF” or equivalent language.

NEC 514.12

Each dispensing device shall be provided with a means to remove all external voltage sources, including power, communications, data, video circuits, and feedback, during periods of maintenance and service of the dispensing equipment. The location of this means shall be adjacent to the dispensing device, and capable of being locked in the open position. The provision for locking or adding a lock to the disconnecting means shall be installed on or at the switch, circuit breaker, or other device used as the disconnecting means, and shall remain in place with or without the lock installed.

Chapter 4. Warning Label Descriptions

Warning Label Descriptions

There are four (4) levels of warning labels used. This modified descriptions is from ANSI Z535.

1. DANGER
    - This is the highest level of warning. If the instructions are not followed, serious injury and even death may occur. The DANGER logo uses a red or black and red background with white lettering.
2. WARNING
    - This level notice will be displayed when serious injury may occur if the instructions are not strictly followed. These warnings typically appear when working around live equipment with moving machinery. The label is orange and black in color.
3. CAUTION
    - This label is displayed with cautionary information which indicates that minor injury and potential equipment damage may result if instructions are not adhered to. Coloration is usually yellow with black or red lettering.
4. NOTE/NOTICE
    - This type of label is used to point out important information that a technician or operator needs to be aware of. Labels are usually blue and white but can also be composed of text with the triangle “alert” icon.

Other Labels

There are also two (2) precautionary labels that may be used in this manual.

1. HIGH VOLTAGE
    - This label is often found on shields or guards that prevent any person from coming in contact with high voltage. This symbol may also be used on components that may carry a voltage potential that is above $50VHAC_{PP}$.
2. LOCKOUT
    - This label is a recommendation to the qualified person that lockout/tagout procedures should be used in the area to be worked on.

Chapter 5. Installation and Set Up

Installation and Set Up

This section will describe the general installation of PowerPanel^{TM} systems. Please refer to all site-specific documentation for detailed wiring and equipment hookup instructions.

Installation of PowerPanel^{TM} Integrated Systems

For full PowerPanel^{TM} or PowerPanel^{TM} system installations, on-site preparation should take place prior to equipment delivery.

Site Template

This template will be site-specific. An engineering template is recommended to be requested from the Engineering staff to be ordered with equipment. This will assist in accurate placement and arranging of the conduit stub-ups prior to concrete slab pour. Chase drawings are also available once the job has been ordered.

Contact Engineering for more information.

Equipment Delivery and Acceptance

Visually inspect all shipping skids, banding, etc. to ensure equipment was not damaged in transit prior to receipt signing. An equiment list will be provided to verify shipment of all required equipment.

Note any discrepancies or damage in the delivery ticket with driver's initials, indicating it as noted.

Setting Up the Equipment

Most shipped equipment will be on a shipping skid, removable by heavy-duty forklift. In some cases, equipment will be delivered on an open flat-bed trailer and can be removed by crane and lifting hoist.

Once equipment is permanently in place, remove the lifting bars at the top of the unit. Refer to the “Installation Lifting Drawing” for special sealing instructions regarding the NEMA 3R design. Seals are included with the equipment and must be installed prior to unit inspection approval.

Proceed with equipment installation as per documentation by permanently securing the PowerPanel ^{TM} to the concrete *mounting* pad.

Check all main breaker sizes, lug sizes, and feed wire sizes for compatibility before proceeding.

Wiring Connections

Before terminating any wires to the PowerPanel^{TM} panel, perform a visual inspection of all factory wiring for any damage or possible loose wires. All wires have been torqued properly at the factory. It is a good idea to go through the panel and perform spot checks of wiring by tugging on them gently to verify that there are no loose wires. Use the documentation provided for proper wire gauge sizes and insulation types. Generally, wiring of type THHN is suited for most PowerPanel^{TM} wiring.

Optional - Cashier Control Center

If your system has a remote CCC, find a suitable location for the fuel shutdown/fuel reset station (usually mounted underneath the counter at the check stand). Verify that the fuel shutdown button will not be in an area where it will be accidentally bumped, as this will shut down all fueling operations.

There are four (4) wires from the shutdown/reset station that will be connected to the PowerPanel^{TM}. These wires can be #16AWG or larger. It is recommended to make the shutdown wires **red** and the reset wires **black** to avoid confusion during final termination.

The two (2) wires connected to the shutdown button will be terminated to the lower side of terminal block ES2. You will need to ***remove*** the **red** jumper wire when you make this termination.

Terminate the two (2) wires from the reset button to the black terminal marked R2. The red terminal ES1 and the black terminal R1 are used for the shutdown/reset buttons on the front door of the PowerPanel^{TM}.

Once fuel shutdown/fuel reset station connections are made, place the cover back on the enclosure with the appropriate screws.

Remote Shutdown

The remote shutdown pushbuttons will deploy through terminal ES3. Remove the jumper wire from this block and discard it.

Regardless of how many pushbuttons will be wired, they must be wired in a single series circuit. Accidentally wiring multiple pushbuttons in parallel will result in the shutdown circuit not working properly.

Once all pushbuttons are terminated, the fuel shutdown/fuel reset circuits are complete.

Chapter 6. Initial Start-Up and Commissioning

Initial Start-Up and Commissioning

The PowerPanel^{TM} is a 120VAC-based system. Only qualified personnel familiar with all functions of a fueling forecourt are to perform a start or restart operation.

Chapter 7. Restarting System from Power Failure

Restarting System from Power Failure

In the event of a power failure, the ES1 and ES2 contactors will drop out immediately.

Restarting System Procedure

1. Verify that no damage from a lightening strike or other storm-related damage has occurred.
2. If all facility equipment checks out okay, press the green "RESET" button to start fueling operations again.

Shutting Down a Dispenser for Maintenance

If it is necessary to shut down a a single dispenser for maintenance, please follow the lockout procedure located in the “Lockout Procedure” section of this manual for a safe shutdown.

1. Bag the dispenser according to site protocols.
2. Locate the breaker in the panelboard for that dispenser and turn it to the OFF position.
3. Perform the lockout procedure.

Chapter 8. Lockout Procedure

Lockout Procedure

Electrical contractors or anyone qualified to work on the PowerPanel^{TM} must be familiar with proper lockout procedures.

The breakers for this panel are capable of being locked out during maintenance operations or, if otherwise required, of being locked in the ON position.

Critical or life safety loads require the power source to be locked in the ON position so there will be no accidental disruption of service.

Procedure

The following is the typical procedure for locking out a breaker.

1. Turn designated breaker to the OFF position.
2. With your thumb and forefinger, squeeze the retainer clips of the lockout together. Locate the two retainer holes just below the breaker handle.
3. Slip the retainer pins into the two holes and release.
4. Now raise the tab of the lockout and push down towards the retaining clips. The body will slide down over the clips, and the lockout loop will reappear near the top.
5. With the lockout loop exposed, apply you padlock to the device. the lockout will take a lock with approximately a 5/16" shank. If you have TAG-OUT procedure in place, apply notice at this time.

If you are unsure or have questions regarding this or any other procedure described in this manual, please contact your local representative.

Other Lockouts

The main breaker that feeds power to the PowerPanel^{TM} will need to be locked out if servicing of the panel itself is required.

Consult the breaker manufacturer’s procedure to perform the lockout.

If you have the optional STP breaker and bus assembly as part of your unit, use the Lockout Procedure as listed in the “Lockout Procedure” section of this manual. The lockouts will be different since they are made to accommodate 2 or 3 pole breakers.

Again, with this optional assembly, there will be a separate feed breaker powering the bus assembly. Consult the manufacturer’s recommendations in regard to the proper method for locking out the breaker.

Chapter 9. System Startup and Maintenance

System Startup and Maintenance

This section will describe the basic steps and procedures that must be followed to ensure a safe startup when starting up the PowerPanel™ for the first time or restarting the system after a fuel shutdown or power outage event.

Chapter 10. Maintenance

Maintenance

The PowerPanel^{TM} needs very little maintenance to keep it in good working order.

Monthly:

1. Perform an Emergency Fuel Shutdown and Reset operation and verify proper operation. If you have more than one shutdown, make sure each shutdown will turn the system to the OFF position.
2. Open the Fueling Panel section and inner door. Visually inspect the operational lights on the TVSS to verify that it is in operational mode.
3. For NEMA 3R enclosures, verify that the 3-point door latches are adjusted properly. When adjusted properly, the enclosure door will compress about half of the door gasket all the way around.

Semi-Annually:

1. Inspect all door gaskets for any damage and if found, replace immediately.
2. Inspect interior of cabinets (Both LV Section and Fuel Panel sections) for any buildup of moisture or other aggregates. Clean as required.
3. Check the incoming voltage at the panelboard main breaker for all 3 phases and neutral.

Annually:

1. Power down the main breaker of the panelboard and go through the wiring connections to verify that all is tightened as should be. Perform random ‘pull’ tests on some of the wiring to verify that no loose wiring exists.